

IN THE CLAIMS:

Please CANCEL claims 2, 5, 9 and 11 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 1, 3, 4, 6-8 and 10, as follows. For the Examiner's convenience, all claims currently pending have been reproduced below.

1. (Currently Amended) A near-field exposure method wherein a pressure difference is applied [[to]] between a front face and a rear face of an elastically deformable exposure mask to cause deformation of the exposure mask in accordance with a substrate to be exposed and to cause the exposure mask surface to follow a surface irregularity state of the substrate so that these surfaces are closely contacted to each other, for exposure based on near field light, ~~characterized in that~~ said method comprising:

setting the pressure difference applied [[to]] between the front and rear faces of the exposure mask is set at a predetermined pressure difference corresponding to a surface roughness of the substrate to be exposed, wherein the predetermined pressure difference is set at a pressure difference larger than a minimum pressure P, which is determined to satisfy equation (1) below, in relation to a maximum surface roughness w at a measurement length a of the substrate to be exposed:

$$P = P_m + E \frac{16hw(4h^2 + (7 - \nu)w^2)}{3a^4(1 - \nu)} \quad \dots (1)$$

wherein h is a thickness of a thin-film mask base material, E is Young's modulus, ν is Poisson's ratio, and P_m is a pressure difference for roughly contacting a first substrate and a second substrate with each other.

2. (Canceled)

3. (Currently Amended) A method according to ~~Claim 2~~ claim 1, wherein the predetermined pressure difference is set at a pressure difference larger than the minimum pressure P only when the surface roughness of the substrate to be exposed is greater than a reachable depth of the near field light.

4. (Currently Amended) A near-field exposure apparatus for performing ~~[[an]]~~ exposure on the basis of near field light, said apparatus comprising:

means for holding a thin film mask~~[[,]]~~;

a pressure container capable of applying ~~[[a]]~~ pressure to apply a pressure difference ~~[[to]]~~ between a front face and rear face of the thin film mask~~[[,]]~~;

control means for controlling the pressure difference~~[[,]]~~;

a stage for holding a substrate to be exposed~~[[,]]~~; and

a light source, ~~characterized in that:~~

wherein said control means is operable to set the pressure difference at a predetermined pressure difference corresponding to a surface roughness of the substrate to be exposed,

wherein said control means is operable to set the predetermined pressure difference at a pressure difference larger than a minimum pressure P, which is determined to satisfy equation (1) below in relation to a maximum surface roughness w at a measurement length \underline{a} of the substrate to be exposed,

$$P = P_m + E \frac{16hw(4h^2 + (7 - \nu)w^2)}{3a^4(1 - \nu)} \quad \dots (1)$$

wherein h is a thickness of a thin-film mask base material, E is Young's modulus, ν is Poisson's ratio, and P_m is a pressure difference for roughly contacting a first substrate and a second substrate with each other.

5. (Canceled)

6. (Currently Amended) An apparatus according to ~~Claim 5~~ claim 4, wherein the predetermined pressure difference can be set at a pressure difference larger than the minimum pressure P only when the surface roughness of the substrate to be exposed is greater than a reachable depth of the near field light.

7. (Currently Amended) An apparatus according to ~~any one of Claims 4-6~~ claim 4, further comprising measuring means for measuring a surface roughness of the substrate to be exposed.

8. (Currently Amended) A near-field exposure mask to be used in an exposure process based on near ~~field~~ field light while a pressure difference is applied ~~[[to]]~~ between a front face and a rear face of an elastically deformable exposure mask to cause deformation in accordance with a substrate to be exposed and to cause the mask to follow a surface irregularity state of the substrate so that these surfaces are closely contacted to each other, ~~wherein the said~~ exposure mask ~~comprises~~ comprising:

a transparent thin-film mask base material; and

a light blocking film formed therein, ~~characterized in that~~:

wherein the thin-film mask base material has a predetermined thickness

determined on the basis of a surface roughness of the substrate to be exposed and a pressure difference to be applied ~~[[to]]~~ between the front and rear faces of the mask during the exposure,

wherein the predetermined thickness is set at a thickness less than a maximum

film thickness determined to satisfy equations (2a) and (2b) below:

$$w(a, h, \Delta P) = \frac{4h^2}{7 - \nu} \frac{1}{[R(a, h, \Delta P)]^{1/3}} + \frac{[R(a, h, \Delta P)]^{1/3}}{3} \quad \dots (2a)$$

$$R(a, h, \Delta P) = \frac{1 - \nu}{7 - \nu} \frac{81a^4 \Delta P}{32hE} + \sqrt{1728h^6 + \left(\frac{1 - \nu}{7 - \nu} \frac{81a^4 \Delta P}{32hE} \right)} \quad \dots (2b)$$

wherein h is a thickness of a thin-film mask base material, E is Young's modulus,

ν is Poisson's ratio, ΔP is an applied pressure to be applied after the rough contact, and w is a

surface roughness at a measurement length \underline{a} .

9. (Canceled)

10. (Currently Amended) A near-field exposure mask according to ~~Claim 9~~ claim 8, wherein the predetermined thickness is set at a thickness, which is ~~smaller~~ less than a smallest value of a maximum thicknesses determined in accordance with equations (2a) and (2b), ~~mentioned above~~ with reference to those substrate portions, respectively, in which portions, among largest surface roughnesses at different measurement lengths with respect to the substrate to be exposed, the value of roughness is greater than a reachable distance of the near field light.

11. (Canceled)